CHEKMAREV, A.P., akademik; KUTSOV, Yu.G.; SHIBAYEV, V.L.

Mechanical properties and structure of the weld zone in rolled sections of butt-welded blanks. Met. i gornorud. prom. no.4: 44-45 Jl-Ag '64. (MIRA 18:7)

1. AN UkrSSR (for Chekmarev).

CHEKMAREV, A. P.; SAF'YAN, M. M.; KHOLODNYY, V. P.

Shear drag in rolling strips with irregular reduction. Izv. vys.ucheb.zav.; chern.met.7 no. 4:77-82 '64. (MIRA 17:5)

1. Dnepropetrovskiy metallurgicheskiy institut.

CHEKMAREV, A.P., akademik; POBEGAYLO, G.G., kand. tekhn. nauk

Economic efficiency of redesigning tandem section mills using rigid stands. Met. i gornorud. prom. no.6:27-29 N-D '64. (MIRA 18:3)

1. Akademiya UkrSSR (for Chekmarev).

CHEKMAREV, A.P.; SMOL'YANINOV, A.F.; LEBEDIK, G.L.

Experimental investigation of forward flow during longitudinal periodic rolling. Izv. vys. ucheb. zav.; chern. met. 7 no.3: 61-65 '64. (MIRA 17:9)

1. Dnepropetrovskiy metallurgicheskiy institut.

CHEKMAREV, A.P.; SMOL'YANINOV, A.F.; LEBEDIK, G.I.

Burr and draft distribution during periodic rolling in roll passes. Izv. vys. ucheb. zav.; chern. met. 7 no.12:88-92 '64 (MIRA 18:1)

1. Dnepropetrovskiy metallurgicheskiy institut.

CHEKMAREV, A.P., akademik; VATKIN, Ya.L., doktor tekhn. nauk; KHANIN, M.I., inzh.; KUSHCHINSKIY, G.N., inzh.

Piercing on mills with oblique rolls and axial billet support. Stal' 24 no.12:1113-1116 D '64. (MIRA 18:2)

1. AN UkrSSR (for Chekmarev).

CHEKMAREV, A.P., akademik; RABINOVICH, S.N.

Investigating the power conditions for rolling automobile sections. Met. i gornorud. prom. no.2:37-40 Mr-Ap '65. (MIRA 18:5)

1. Akademiya nauk UkrSSR (for Chekmarev).

CHEKMAREV, Aleksandr Petrovich; GUNIN, Ivan Vasil'yevich; MASHKOVTSEV, Rostislav Arkad'yevich; FILIPPOV, Igor' Nikolayevich; GOLUBCHIK, R.M., red.

[Production of lightweight rolled sections] Proizvodstvo oblegchennykh profilei prokata. [By] A.P.Chekmarev i dr. Moskva, Metallurgiia, 1965. 423 p.
(MIRA 18:5)

CHEKMAREV, A.P.; SMOL'YANINOV, A.F.; KLIMENKO, P.L.; LEBEDIK, G.L.

Experimental determination of instantaneous forward slip and the cross section of the metal leaving the rolls in rolling with variable radii rolls. Izv.vys.ucheb.zav.; chern.met. 8 no.6:97-100 '65. (MIRA 18:8)

1. Dnepropetrovskiy metallurgicheskiy institut.

CHEKMAREV, Aleksandr Petrovich; NEFEDOV, Anatoliy Aleksandrovich; NIKOLAYEV, Viktor Aleksandrovich; FILIPPOV, I.N., kand. tekhn. nauk, otv. red.; VAYNBERG, D.A., red.

[Longitudinal rolling theory] Teoriia prodol'noi prokatki. Khar'kov, Izd-vo Kharkovskogo univ., 1965. 211 p. (MIRA 18:8)

CHEKMAREV, A.P., akademik, nauchn. red.; BORISOV, S.I., doktor tekhn. nauk, nauchn. red.; MATVEYEV, Yu.M., doktor tekhn. nauk, nauchn. red.

[Technical progress of the pipe industry] Tekhnicheskii progress v trubnom proizvodstve. Moskva, Metallurgiia, 1965. 263 p. (MIRA 18:7)

1. Akademiya nauk Ukr.SSR (for Chekmarev).

CHEKMAREV, A.P.; POBEGAYLO, G.G.

Determining metal pressure on the rolls in a working stand.
Izv. vys. ucheb. zav.; chern. met. 8 no.1:85-87 '65
(MIRA 18:1)

1. Dnepropetrovskiy institut chernoy metallurgii.

CHEKMAREV, A.P.; SAF'YAN, M.M.; KHOLODNYY, V.P.; SUKHOBRUS, Ye.P.

Study of nonuniform deformation in rolling slabs on a continuous sheet mill. Stal' 25 no.4:334-335 Ap '65. (MIRA 18:11)

1. Dnepropetrovskiy metallurgicheskiy institut.

CHEKMAREV, A.P., akademik; KOVALENKO, Yu.Ye., kand. tekhn. nauk; RYABOKON', N.K., inzh.; STAROSELETSKIY, M.I., inzh.; KLYUKIN, A.N., inzh.; ROSHCHIN, A.G., inzh.; MAKAYEVA, T.S., inzh.; BOCHKAREV, V.A., inzh.; MEZENIN, G.F.; TRAKHMAN, L.D.

Investigating the precess of rolling wheels at the Nizhniy Tagil metallurgical combine. Stal' 25 no.6:543-546 Je '65. (MIRA 18:6)

1. VNITI i Nizhne-Tagil'skiy metallurgicheskiy kombinat.

L 41274-66 EWT(d)/EWT(m)/EWP(f)/EWP(c)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l)
ACC NR: AT6012089 (N) SOURCE CODE: UR/3177/65/021/000/0038/0052
IJP(c) JD/WW/HW/JG/DJ/JT

AUTHOR: Chekmarev, A. P. (Academician AN UkrSSR); Saf'yan, M. M. (Professor); Meleshko, V. I. (Candidate of technical sciences); Prokof'yev, V. I. (Candidate of technical sciences); Avramenko, I. N. (Engineer); Dodoka, V. G. (Engineer); Ksenzuk, F. A. (Engineer) Kudin, D. P. (Engineer); Lola, V. N. (Engineer); Movshovich, V. S. (Engineer); Pavlishchev, V. B. (Engineer); Soroko, L. N. (Engineer); Sukhobrus, Ye. P. (Engineer); Kholodnyy, V. P. (Engineer); Yudin, M. I. (Engineer)

ORG: none

TITLE: Improvements in the techniques of production of Kh18N10T cold-rolled wide-strip steel at the Zaporozhstal' Plant

SOURCE: Dnepropetrovsk. Institut chernoy metallurgii. Trudy, v. 21, 1965. Prokatnoye proizvodstvo (Welding production), 38-52

TOPIC TAGS: stainless steel, bright stock lubricant, metal rolling, sheet metal, industrial plant / Kh18N10T stainless steel, P-28 bright stock lubricant

ABSTRACT: On increasing to 11.8 tons from the previous 10.3 tons the weight of the ingots

Card 1/2

L 41274-66

ACC NR: AT6012089 7

of Kh18N10T stainless steel used to produce 1000 mm wide sheets, the Zaporozhstal' Plant found it possible to reduce by 40-50 kg/mm^2 the wastage of metal during slabbing. Other innovations introduced in recent years at this plant include: fettling, flame scarfing and planing of ingot surfaces so as to eliminate defects of metallurgical origin prior to slabbing. These measures, along with improvements in the ingot reheating regime, have made it possible to increase the productivity of slabbing mills by 15-20%. The ingots themselves are cone-shaped in order to optimize the conditions of crystallization of the molten metal. After trimming and heating to 1050-1300°C the slabs proceed to a continuous strip mill where they are rolled into 1000 mm wide strip. By introducing the cold rolling of this strip in a reversible four-high mill with a reduction of 85% and by abandoning the practice of intermediate quenching during the production of 0.8-1.4 mm thick sheets rolled from 3.0 mm thick stock, using P-28 bright stock (highly viscous mineral oil) as the lubricant, using highly polished rolls, and increasing the convexity of the rolls to offset the increase in roll pressure, and thus streamlining the rolling techniques to an extent at which it became possible to roll in 13 passes 0.8 mm thick strip without overloading the rolls and main drive, the Zaporozhstal' Plant has found it possible to increase by 81% the productivity of its sheet mill and by 180%, the productivity of its reversible cold-rolling mill. The annual savings produced by these innovations amount to: for the slabbing-mill shop, 162,000 rubles; for the sheet-mill shop, 91,000 rubles; for the cold rolling shop, 719,000 rubles. Orig. art. has: 3 figures, 9 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 015

Card 2/2

L 41262-66 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW

ACC NR: AT6012090 SOURCE CODE: UR/3177/65/021/000/0306/0309

AUTHOR: Chekmarev, A. P. (Academician AN UkrSSR); Kachaylov, A. P. (Candidate of technical sciences)

5/48 B+1

ORG: none

TITLE: Plasticity of steel at high temperatures

SOURCE: Dnepropetrovsk. Institut chernoy metallurgii. Trudy, v. 21, 1965. Prokatnoye proizvodstvo (Welding production), 306-309

TOPIC TAGS: low chromium steel, high chromium steel, plasticity, high temperature effect, torsion strength / ShKh15 low-Cr steel, Kh9S2 high-Cr steel

ABSTRACT: Plasticity is one of the features that must be considered when selecting the regime of heat treatment for any mark of steel; it is highly influenced by temperature. In view of the current rapid advances in the production of high-alloy steels and alloys which are prone to overheating (above the liquidus), the need for a method of quick preliminary determination of the plastic properties of steel at high temperatures has become particularly acute. The torsion test is gaining increasingly popularity in this respect. Its findings are used to plot the number of twists until rupture as a function of temperature. However, various investiga-

Card 1/4

tors use specimens of various dimensions (particularly length) when studying plasticity by means of the torsion test, and this complicates a comparison of the experimental findings. To eliminate this complication, the authors propose using a new plasticity indicator in lieu of the number of twists until rupture (which are greatly affected by the length of the specimens), namely, the relative angle of twist until rupture:

$$\theta = \frac{\varphi}{l_p},$$

where θ is angle of twist at rupture, radians; l_w is the length of working part of the specimen, mm. This eliminates the effect of dimension of the specimen on the experimental findings. To confirm the validity of this formula, hot twist tests were carried out with the aid of a clamp revolving at the fixed rate of 150 r.p.m. The values of the plasticity indicator θ were calculated for each temperature (900, 1000, 1100 and 1200°C) with respect to 10 marks of steel. The findings, as presented in the form of curves in Fig. 1, which shows that, e.g. steel no. 2 (ShKh15 low-Cr steel) displays maximum plasticity (θ = 1.7 radians) when hot-twisted at 1000°C, whereas at the same temperature the θ of steel no. 5 (Kh952 high-Cr steel) falls to its minimum (0.7 radians). Considering that octahedral displacement is a good criterion of the change in deformation on transition from one stressed state to another, and further con-

L 41262-66

ACC NR: AT6012090

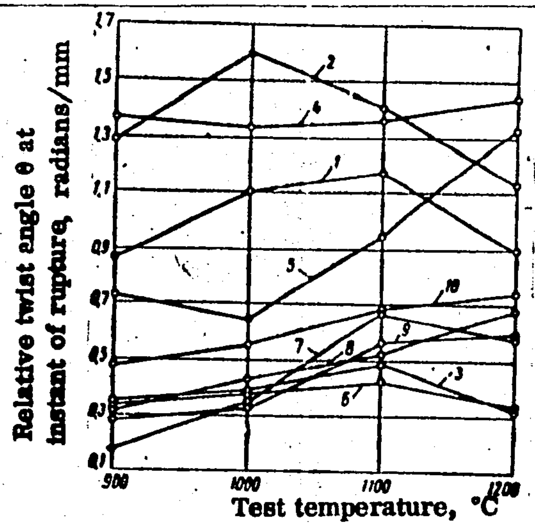

Fig. 1. Indicator of plasticity of steel during twisting as a function of test temperature. The figures on the graph pertain to the ordinal number of the steel tested

Card 3/4

L 41262-66

ACC NR: AT6012090

sidering that relative rolling reduction $\epsilon = h_0 - h_1/h_0$, at which the first signs of fracture appear, serves as the criterion of the maximum plasticity of steels and alloys, the authors calculated as follows the ratios of relative displacements γ during torsion to relative reductions ϵ :

ϵ	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9
γ	0,183	0,399	0,657	1,0	1,5	2,33	3,9	8,37	27,02

Since $\gamma = \theta R_{av}$ and the specimens tested had a 9-mm radius of working part, it is possible with the aid of the above data to refer maximum plasticity to the corresponding degree of relative reduction during rolling. These findings make it possible to compare the plasticity of metals at high temperatures so as to accordingly improve their hot working. Orig. art. has: 1 figure, 2 tables.

SUB CODE: 13,11,20/SUBM DATE: none/ ORIG REF: 010/ OTH REF: 001

Card 4/4 JC

CHEKMAREV, A. P.

co

9

PROCESSES AND PROPERTIES INDEX

Energy expenditure and resistance to deformation involved in rolling wires and small shapes. A. P. Chekmarev. *Domez* 1935, No. 4-5, 2-30.—Two grades of C steel, (1) approx. 0.15 C and 0.4 Mn, and (2) approx. 0.5 C and 0.7 Mn, were used in rolling small shapes and wires in a series of expts. to det. the amt. of work required for the various shapes and sizes, and also the effect of temp. and chem. compn. of the steel on the work. The results are expressed in tabular and graphical form. Forty references. S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CHEKMAREV, Aleksandr Petrovich and others

The Method of Rolling Under Pressure, Khar'kov, Kiev, 1936, 1936

CHEKMAREV, A. P.

ENERGY CONSUMPTION IN ROLLING WITH SMOOTH ROLLS. A. Chekmarev. (Stal, 1939, No. 9, pp. 41-44). (In Russian). Mathematical expressions for the energy consumption in rolling suggested by different Russian authors are critically considered. The conclusion is arrived at that there is a fundamental difference between expressions for the energy consumption derived from a consideration of the speed of the rolls and those derived from a consideration of the speed of the metal. The figure given by expressions of the first type is greater that that derived from the other expressions by the amount of energy lost in the friction resulting from the slipping between the metal and the rolls. The author derives expressions for the work done against this friction due to slipping and the work done by the friction which is taken up by the metal.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CHEKMAREV, A. P.

42358: CHEKMAREV, A. P. - Operezheniye i koefitsiyent vneshnego treniya pri prokatke "auch. Trudy (Dnegrogetr. metallurg. in-t im. Stalina). VYP 12, 1948, s 36-51.

SO: Letopis' Zhurnal'nykh Statey, Vol 47, 1948.

SPIRIDONOV, M. P.; CHEKMAREV, A. P.

Rolling (Metalwork)

Direction of uniformly acting forces exerted on rollers by bars during an ordinary rolling process. Trudy Inst. chern.met. AN URSR no. 5, 1951.

9. MONTHLY LIST OF RUSSIAN ACCESSIONS, Library of Congress, December 1952 UNCL.

CHEKMAREV, A. P.

"Reducing the Tolerance for Rolled Products is a Great Source of Great Metal Economy," Trudy Inst. chern.met.,AN URSR, No.5, 1951

CHEKMAREV, A.P., laureat Stalinskoy premii; BARATOV, E., red.; VOLKOVA, N., tekhn.nred.

[Precision rolling] Tochnaia prokatka. Kiev, Gostekhizdat UkrSSR, 1952. 251 p. (MIRA 16:6)

1. Deystvitel'nyy chlen Akademii nauk UkrSSR (for Chekmarev).
(Rolling(Metalwork))

CHEKMAREV, Aleksandr Petrovich and MAYZLIN, Yu. Sh.

Automatic Water-Cooling Apparatuses for Rolling Mills, Kiev, 1952

CHEKMAREV, A.P.

ZHUKOVSKIY, B.D.; ZIL'BERSHTEYN, L.I.; OSADA, Ya.Ye.; CHEKMAREV, A.P.

[Electric welding of pipes by the resistance method] Proizvodstvo trub elektrosvarkoi metodom soprotivleniia. Pod.red. A.P.Chekmareva. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1953. 461 p. (MLRA 7:6)

1. Deystvitel'nyy chlen AN Ukrainskoy SSR (for Chekmarev).
(Electric welding) (Pipe--Welding)

CHEKMAREV, A.P.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Chekmarev, A.P.	"Automatic Shunting Apparatus in Rolling Mills"	Presidium, Academy of Sciences Ukrainian SSR

SO: W-30604, 7 July 1954

CHEKMAREV, ALEKSANDR PEGROVICH

Usovershenstvovaniye Proizvodstva Trub (Opyt Raboty Truboprokatnogo Zavoda Im. Lenina) (Improvement of the Production of Piping, By) A. P. Chermarev, G. L. Batkin, Z. O. Knyazhinskiy (Dr.) Moskva, Metallurgizdat, 1954.

159 P. Illus., Diagrs., Tables.

CHEKMAREV, Aleksandr Petrovich; MASHKOVTSEV, Rostislav Arkad'yevich, kandidat tekhnicheskikh nauk; NIKOLAYEVSKIY, Yu.I., redaktor; SIRENKO, S.M., redaktor; ANDREYEV, S.P., tekhnicheskiy redaktor

[The wear of rollers] Iznos prokatnykh valkov. Khar'kov, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1955. 146 p. (MLRA 9:4)

1. Deystvitel'nyy chlen AN USSR (for Chekmarev)
(Rolling mills)

CHEKMAREV, A.P.; VATKIN, Ya.L., dotsent; BERDYANSKIY, M.G., inzhener; LUBENSKIY, I.M., inzhener; SLESARCHIK, S.D., inzhener.

Reducing longitudinal differences in the walls of pipes made on automatic mills. Stal' 15 no.1:58-62 Ja '55. (MLRA 8:5)

1. Deystvitel'nyy chlen Akademii nauk USSR (for Chekmarev).
2. Dnepropetrovskiy metallurgicheskiy institut i Truboprokatnyy zavod im. Lenina.

(Pipes, Steel) (Rolling-mill machinery)

CHEKMAREV, A. P.

BUR'YANOV.V. kandidat tekhnicheskikh nauk.

"Precision rolling". A.P.Chekmarev. Reviewed by V.Bur'yanov. Stal' 15 no.4:383-384 Ap '55. (MIRA 8:6)

1. Ministerstvo tyazhelogo mashinostroyeniya.
(Rolling (Metal work)) (Chekmarev,A.P.)

CHEKMAREV A. P.

1552* Intensification of Reduction Rate for an 1150-mm. Blooming Mill. Intensifikatsiia rezhima obzhatii na bluminge 1150. (Russian.) A. P. Chekmarev, V. L. Pavlov, V. M. Klimenko, G. E. [illegible], E. M. Fortunov, and P. A. Vashchilo. *Stal*, v. 15, no. 10, Oct. 1955, p. 916-921.

Studies to speed up rate of rolling steel blooms without impairing quality. Micro-structure and mechanical properties of blooms. Tables, micrographs, photograph, diagram. 8 ref.

HG

5

CHEKMAREV, A.P.

18(3); 18(5) PHASE I BOOK EXPLOITATION SOV/2452

Akademiya nauk Ukrainskoy SSR. Otdeleniye tekhnicheskikh nauk

Voprosy proizvodstva stali, vyp. 4 (Problems in Steelmaking; Nr. 4) Kiyev, Izd-vo AN Ukrainskoy SSR, 1956. 163 p. 3,000 copies printed.

Resp. Ed.: N. N. Dobrokhotov, Academician, UkrSSR Academy of Sciences; Ed.: B. A. Kazantsev; Tech. Ed.: A. D. Zhukovskiy.

PURPOSE: This book is intended for advanced students and for scientists and personnel in the metallurgical industry.

COVERAGE: The papers in this collection present information on recent Soviet technological developments stated to be of considerable theoretical and practical importance in the production and teeming of steel. A number of articles deal directly with matters of method (alloying, deoxidizing, top and bottom pouring, production of open-hearth and electric steel). Some are concerned with the investigation of phenomena such as change

Card 1/4

of hydrogen content during the production of steel. Others describe the effect of various factors on the final product (shape of ingot, pouring temperature, addition of aluminum, etc.). There is one book review. References follow some of the papers.

TABLE OF CONTENTS:

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308310015-0"

Problems in Steelmaking; No. 4 SOV/2452

Steel) by A. N. Morozov and A. I. Stroganov 156

AVAILABLE: Library of Congress

GO/jb
10-27-59

Card 4/4

SOV/137-57-6-10934

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 6, p 220 (USSR)

AUTHORS: Chekmarev, A.P., Yefimov, V.A., Grechko, V.F., Filichkin, I.F.

TITLE: The Effect of Aluminum Upon the Plastic Properties of Steel at High Temperatures (Vliyaniye alyuminiya na plasticheskiye svoystva stali pri vysokikh temperaturakh)

PERIODICAL: V sb.: Vopr. proiz-va stali. Nr 4. Kiyev, AN UkrSSR, 1956, pp 126-128

ABSTRACT: An investigation is made of billets 90 mm in diameter and 300 mm long made of Nr 3T furnace steel melted in a basic open hearth and of rail steel melted in the Bessemer converter. The process of deoxidation of the experimental heats is modified by addition of 725-2000 g Al in the ladle per t of Nr 3T steel, and 275-1000 g per t of rail steel. Three samples are taken of each of the six heats of this grade. Two of the samples are rolled while a section is cut from the third for study of the nature of the disposition of nonmetallic inclusions and the size of the austenite grain. Determination of the ductility (D) of the metal is by rolling on the collar. The D criterion is taken to be the magnitude of relative deformation at which cracks

Card 1/2

The Effect of Aluminum Upon the Plastic Properties of Steel at High Temperatures

appear in the side surfaces of the rolled strip, i.e., $U=(H-h/H)\cdot 100$, where U is the D limit, and H and h are respectively the initial and final heights of the sample. It is found that Nr 3T steel shows its lowest D limit on addition of 800 g Al/t. The maximum D for this steel is obtained on addition of 1250 g Al/t. In this case, damage to continuity sets in upon 75-88% reduction per pass. Rail steel has its maximum D when it is deoxidized by 450 g Al/t. It is found that upon small additions of Al the oxysulfides take the form of separate accumulations and thus result in steel of satisfactory ductility. When the amount of Al rises to critical, the sulfides come down as chains or films which, creating weak spots in the metal, sharply reduce the D of the steel. It is also established that upon rolling the highest D is that of specimens in which the native austenite grain is small. The lowest D indices are those of specimens with medium-sized austenite grains.

L.G.

Chekmarev, A. P.

CHEKMAREV, A.P., prof., doktor

Word of introduction. Trudy UkrNTOChM 1:3-4 '56. (MIRA 10:12)

1. Deystvitel'nyy chlen AN USSR.
(Rolling (Metalwork))

Chekmarev, A. P.

137-1957-12-23636

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 113 (USSR)

AUTHOR: Chekmarev, A. P.

TITLE: Methods for Computing Reduction, Selecting the Dimensions of Calibers, and Determining the Productivity of Blooming Mills (Metodika rascheta obzhatiy, vybora razmerov kalibrov i opredeleniye proizvoditel'nosti blyumingov)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii. Ukr. resp. pravl., 1956, Vol 1, pp 5-12

ABSTRACT: An analysis of the theoretical recommendations on the calibration of blooming mills (by A. P. Vinogradov on the regimen of reduction (R); A. P. Chekmarev on the thickness of the material in the process of rolling (Ro) and on the maximum angle of seizure; and by M. L. Zaroshchinskiy on the coefficient of drawing) and practical industrial experience indicate that sufficiently reliable value of the R can be obtained (thus ensuring the most efficient utilization of the blooming mill) by employing calibration based on the angle of maximum seizure, followed up by a check on the data obtained on the capacity of the motor and the strength of the rollers. It should be borne in mind that large R's are not

Card 1/2

137-1957-12-23636

Methods for Computing Reduction, Selecting the Dimensions (cont.)

dangerous, if the rolling velocities and the diameters of the rollers are selected properly. A rectangular (and not a square) shape of ingots is most desirable to achieve a good structure in the rolled material. In the rolling of blooms the first turning over should take place after two passes, the second after four passes, the third after either four or two passes, and all subsequent passes after every other pass. Recommendations are given for the design of the calibers and for the selection of the diameter for the driving rollers. Methods are presented for the computation of the capacity of the blooming mills, which take into consideration not only the duration of separate passes and intervals, but the entire rolling cycle as well.

V. D.

1. Blooming mills-Production 2. Blooming mills-Calibration-Theory

Card 2/2

CHEKMAREV, A.P.

18 18

4

4E2c

Use of Repeaters in Rolling Alloy Steel. A. P. Chekmarev and S. Z. Yudovich. (Stal', 195[illegible] [illegible] (In Russian). Mechanization of 280 and 325 [illegible] [illegible] repeaters on both sides at Dnepr[illegible] [illegible] considerable productivity increase [illegible] with improved product quality.—S. K.

MT

SOV/137-57-1-598

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 79 (USSR)

AUTHORS: Chekmarev, A. P., Chekhranov, V. D.

TITLE: Pass Design of a Universal System for the Rolling of Rounds (Raschet kalibrov universal'noy sistemy dlya prokatki kruglykh profiley)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1956, Vol 10, pp 3-25

ABSTRACT: A universal-pass design method is developed for medium section mills in which the last five passes alternate in accordance with the "square"-"smooth roll"-"vertical pass"-"oval"-"round" system. The same square, oval, and vertical passes may be used in rolling a wide variety of circular shapes. This is achieved by means of regulating the spacing between the rolls. Graphs and formulas for the design and construction of this versatile system are presented.

G. M.

Card 1/1

SOV/137-57-1-599

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 79 (USSR)

...ORS: Chekmarev, A. P., Chekhranov, V. D.

Roll-pass Design and the Reduction Process During Rolling in Blooming Mills (Kalibrovka valkov i rezhim obzhatiy pri prokatke na ...lumingakh)

In-ta chernoy metallurgii AN UkrSSR, 1956, Vol 10, pp 26-43

...ions of the roll-pass design and programming of reductions, ...n six blooming mills in domestic plants during rolling of ... of steel, demonstrate that the engineered program-... ...tion process does not correspond to the actual con-... i. e., the operators of the blooming mills work ...is specified by said programming. The reduc-... ...sses which in accordance with the schedule of ...ooming mill "A" should attain values of ...tween 115 and 125 mm in the first pass ...he second pass; rolling of an ingot .../760 x 680 mm is carried out in 13 ...erations rather than five as

SOV/137-57-1-597

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 79 (USSR)

AUTHORS: Chekmarev, A. P., Meleshko, V. I.

TITLE: Improved Roll-pass Design for Rolling of Rounds on Rolling Mills for Light Sections (Ratsional'naya kalibrovka dlya prokatki krugov na melkosortnykh stanakh)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1956, Vol 10, pp 44-63

ABSTRACT: The novel method proposed for the design of drawing and finishing pass openings of the "oval-square" system utilizes a universal oval-pass design and provides for the selection of the desired drawing ratio on the basis of the greatest permissible angle of bite ensuring full utilization of the gripping capacity of the rolls. The permissible angles of bite are related to the speeds of rolling. An example illustrating the design of passes in accordance with the method proposed is presented.

V. Zh.

Card 1/1

CHEKMAREV, A.P.

137-58-1-595

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 93 (USSR)

AUTHOR: Chekmarev, A. P.

TITLE: Superreduction and Increased Productivity of Rolling Mills (Sverkhobzhatiye i uvelicheniye proizvoditel'nosti prokatnykh stanov)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii, 1956, Vol 10, pp 44-58

ABSTRACT: Tests have shown that the limit of plastic flow in rolling, including alloy steels, is quite high - of the order of 80-90 percent, although only 30-50 percent reduction (R) is employed for these steels. Analysis of the stressing of the metal shows that under conditions of higher R the pattern of operating stresses is approximately the same as in rolling with ordinary R. Light weight blooms of low carbon steels (killed and rimmed) may be reduced 50-60 percent or more per pass during the first passes without damage to the quality of the rolled product. It was found that as R is increased unevenness of deformation is diminished, and this has a favorable effect upon the mechanical properties of the metal (improving the a_k somewhat), as the metal is of high density throughout its cross-section. However, in rolling thick in-

Card 1/2

137-58-1-595

Superreduction and Increased Productivity of Rolling Mills

gots (in blooming mills, billet mills, etc.), an increase in R is inevitably accompanied by the need to employ positive feed. A new layout for R and billet departments is proposed on the basis of the work performed. Therein a single-stand two-high reversible blooming mill working at 110-150 mm B rolls blooms with a cross-section of 320x370 mm. Then come three three-stand R and billet mills of new design in tandem: the first of these (an 850 mill) provides a 200-250 mm square billet (SB), and slabs as well, while the second (a 700 mill) rolls 120-150 mm SB and slabs of smaller cross-section. The third (a 500-600 mill) provides 50-100 mm SB and small cross-section slabs (strip). All the stands employ positive feed of metal into the rolls, making it possible to work with an angle of bite greater than the sliding angle. The capacity of the R and billet department is 5-6 million t/yr.

B. Ye.

1. Rolling mills--Production 2. Steel--Processing--Equipment 3. Steel--Deformation

Card 2/2

CHEKMAREV, A.P.

123-1-503

Translation from: Referativnyy Zhurnal, Mashinostroyeniye, 1957, Nr 1, p.82 (USSR)

AUTHORS: Chekmarev, A.P., Saf'yan, M.M., Pavlov, V.L., Grudev, P.I.

TITLE: Tentative Heat Balance in Plastic Deformation (Orientirovochnyy teplovoy balans pri plasticheskoy deformatsii)

PERIODICAL: Trudy In-ta chernoy metallurgii AN UkSSR, 1956, Nr 10, pp. 129-137.

ABSTRACT: For a proper selection of the cooling system for rollers in a cold-rolling mill it is necessary to know the quantity of heat emanating during the period of metal deformation, and the distribution of this heat. The author's research has indicated that the generated heat is being dissipated in the two

Card 1/2

123-1-503

Tentative Heat Balance in Plastic Deformation (Cont.)

running rollers, two supporting rollers, the rolled metal strip and in the coolant. The authors present thermal design data of the mill with running rollers of 400 mm in diameter, supporting rollers of 1,370 mm in diameter, the rollers' shaft of 1,600 mm long, and the 2,250 HP engine at 300 to 500 rpm.

Card 2/2

M.I.M.

CHEKMAREV, A.P.; VOROTYNTSEV, Yu.V.

Some results of timing by chronograph the work of blooming mill operators. Trudy Inst.chern.met.AN URSR no.10:138-152 '56. (MLRA 9:11)

(Chronograph) (Rolling (Metalwork))

137-58-4-7047

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 106 (USSR)

AUTHOR: Chekmarev, ~~A. P.~~

TITLE: The Wear of Rolling Roll Grooves (Iznos kalibrov prokatnykh valkov)

PERIODICAL: Tr. Nauchno.-tekhn. o-va chernoy metallurgii, 1956, Vol 10, pp 199-211

ABSTRACT: An investigation of the wear of angle, hat-section, and beam grooves and of smooth rolls as a function of the slip of the metal, unevenness in the hardness of grooves, temperature fluctuation, and deformation of the metal, was investigated under operational conditions at a 550 section mill. Data on distribution of wear in grooves in accordance with the various factors is presented. It is recommended that rolls be grooved with consideration of the problem of wear.

D. Z.

1. Rolling mills 2. Rolls--Wear

Card 1/1

CHEKMAREV, A.P.; YUDOVICH' S.Z., kandidat tekhnicheskikh nauk; TRAVININ, V.I.

Guide rounds on small-shape mills. Metallurg no.11:27-29 N '56.
(MLRA 10:1)

1. Deystvitel'nyy chlen Akademii nauk USSR (for Chekmarev). 2. Nachal'nik prokatnoy laboratorii (for Yudovich). 3. Inzhener prokatnoy laboratoii zavoda "Dneprospetsstal'."(for Travinin).
(Rolling mills)

Chekmarev, A.P.

Influence of macrostructure on the plasticity of steel. A. P. Chekmarev, A. A. Dinnik, V. P. Grechko, I. F. [illegible] and N. M. Danil'chenko. *Stal'* 16, 235-40 (1956).—For checking the necessity of light passes in blooming tender ingots, 3 ingots of 0.59% C rail steel and of 0.18 C-0.61 Mn open steel were bloomed down and one of each was cut into slabs contg. ingot skin, dendritic layer, or equiaxial crystals of ingot core. Blooms were then forged down to the dimensions of these slabs, and all of them were rolled after proper heating in one pass into wedges in an eccentric mill with a max. reduction of 93%. Studying reductions necessary for crack formation permitted the conclusion that the macrostructure of the steel has no effect whatever on its plasticity characteristics, and cracking, when occurring, was caused by surface defects. J. D. Gat

Corres. mbr. AS UkrSSR

Inst. Ferrous Metallurgy AS UkrSSR

CHEKMAREV, A.P

CHEKMAREV, A.P., akademik; YUDOVICH, S.Z., kandidat tekhnicheskikh nauk.

Using guides for rolling alloy steel. Stal' 16 no.7:609-614 Jl '56. (MLRA 9:9)

1. Akademiya nauk USSR (for Chekmarev) 2. Institut chernoy metallurgii Akademii nauk USSR i zavod "Dneprespetsstal'".
(Rolling mills)

Chekmarev, Aleksandr Petrovich

PHASE I BOOK EXPLOITATION 375

Katsnel'son, Genrikh Mayorovich; Saf'yan, Matvey Matveyevich; Chekmarev, Aleksandr Petrovich; Malyy, Georgiy Ivanovich

Prokatka tolstykh listov s povyshennoy tochnost'yu (Rolling of Steel Plate to Close Limits) Moscow, Metallurgizdat, 1957. 125 p. 4,000 copies printed.

Ed. (title page): Chekmarev, A. P., Active Member, Ukrainian Academy of Sciences, Doctor, Professor; Ed. (inside book): Pirskiy, F. N.; Ed. of Publishing House: Valov, N. A.; Tech. Ed.: Karasev, A. I.

PURPOSE: This book is intended for engineers and technicians in rolling mills. It can also serve as a manual for researchers and students of vuzes.

COVERAGE: The book deals with the hot rolling of steel plate to close limits on a three-high Lauth mill. Various factors affecting the precision of rolled plate are discussed. The rolling of plate is subject to variables such as: temperature of metal, mill spring, roll design, and other characteristics inherent in the material and equipment.

Card 1/3

The author investigates each of these problems and advances various solutions. There are numerous diagrams and formulae. 6 Soviet references.

TABLE OF CONTENTS:

Card 3/3

GO/vm
6-24-58

SOV/137-58-9-19008

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 123 (USSR)

AUTHOR: Chekmarev, A.P.

TITLE: Problems of Rolling-mill Operation and the Grooving of Rolls in the Light of the Directives of the 20th Congress of the Communist Party of the Soviet Union on the Further Development of the Economy of the USSR in 1956-60 (Zadachi prokatnogo proizvodstva i kalibrovki prokatnykh valkov v svete direktiv XX s''yezda KPSS po dal'neyshemu razvitiyu narodnogo khozyaystva SSSR na 1956-1960 gg.)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii. Ukr. resp. pravl., 1957, Vol 2, pp 6-33

ABSTRACT: Successful performance of the Sixth 5-year Plan in the rolling field requires: 1) The development of a general theory of calibration of mill rolls, embracing roll bite of metals in various grooves, the effect of groove shape on spread and the filling thereof with metal, determination of rolling diameters and forward slip in grooves of various shapes, the dynamics and work performed in rolling various grades of steels, etc; 2) development of the rolling of new and economical shapes and

Card 1/2

SOV/137-58-9-19008

Problems of Rolling-mill Operation and the Grooving of Rolls (cont.)

continuous improvement of the assortment of rolled products in accordance with the requirements of the national economy; 3) improvement in the present grooving of mill rolls to reduce the number of passes by increasing the reduction per pass and by improving the shape of the grooves (to cut down uneven deformation and internal stresses in the metal), and to mechanize and automate the rolling process as fully as possible; 4) introduction of the latest methods of heating the metal in tandem gas-heated conveyor furnaces and by induction heating; 5) an increase in the output of rolled metal of low-alloy steels and an improvement in the strength of the rolled metal so as to deliver it in heat-treated condition; 6) improvement of the equipment of rolling mills (for example, by replacing sliding by roller-type appurtenances) and introduction of the most up-to-date designs of entering and delivery guide devices; 7) an increase in the output capacity of both foundry-type and tandem-type merchant mills so as to combine multiple simultaneous rolling with the use of multiple-guide equipment, more powerful heating installations, etc.; 8) an increase in the accuracy of rolling by improving the machining of load-bearing parts of the stands (rolls, bearing chocks, etc.), conversion to up-to-date roller and fluid bearings, improvement of the wear resistance of grooves and possible introduction of prestressed working stands; 9) improvement of roll quality and expanded utilization of faced steel rolls; and 10) maximum expansion of interchange of progressive experience in rolling and roll-ing-groove making. V.D.

Card 2/2 1. Rolling mills--USSR 2. Rolling mills--Development

SOV/137-58-9-19006

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 123 (USSR)

AUTHOR: Chekmarev, A.P.

TITLE: Grooving for Flanged Sections (Kalibrovka flantsevykh profiley)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii. Ukr. resp. pravl., 1957, Vol 2, pp 151-168

ABSTRACT: An analysis is made of the conditions of deformation of metal in flanged passes. It is observed that unevenness of deformation is inevitable inasmuch as during the initial instant of entry of the metal into the contact area, prior to contact at the web (W), metal flows from the flanges to the W; during the second period the flow of metal is from the W to the flanges and a reduction in the height of the flanges occurs. In grooving for equal drafts of the various elements of the profile, the volumes participating in flow in the 1st and 2nd stages are equal. A method of analysis of flanged sections is adduced. It is observed that at the moment contact at the W occurs, the groove is filled across its width, and therefore the draft of the W may be deemed to be the ratio of its thicknesses ahead of (d_i) and past (d_{i+1}) the pass. In practice, the W draft employed in the final

Card 1/2

passes is less than the flange draft, and the opposite is the case in the first passes. The total draft in each subsequent pass should, it is proposed, be determined from the equation:

$$\mu_{i+1} = q_i + q_i' + d_i b_i / q_{i+1} + d_{i+1}(b_i + 0.5\,\Delta B_{i+1}) = Kd_i / d_{i+1},$$

where q_i and q_{i+1} are the areas of the open flanges of the preceding and following groove, q_i^1 and q_{i+1}^1 are the areas of the closed flanges, ΔB_{i+1} is the spread in the following pass, and K is the ratio of the draft in the W to that in the flanges. From this equation an expression is derived for determination of the thickness of the W in the next following pass. An example of calculation of grooving of rolls for a two-high 800 mill for rolling Nr-24 beams is presented.

M.Z.

1. Rolling mills--Performance 2. Rolling mills--Equipment 3. Materials--Design 4. Mathematics

Card 2/2

CHEKMAREV, A.P. 137-1958-2-2779

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 82 (USSR)

AUTHORS: Chekmarev, A.P., Filipov, S.N., Dinnik, A.A., Grechko, V.P.

TITLE: Investigation of the Conditions of Rolling Seizure in the Presence of a Fully Developed Deformation Area, That Is, in a Stationary Rolling Process [Issledovaniye usloviy zakhvata pri zapolnennom ochage deformatsii (ustanovivshiysya protsess prokatki)]

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1957, Vol 11, pp 3-17

ABSTRACT: Pb samples were rolled experimentally on laboratory mill 150 on flat rolls allowing free spreading, the aim being to determine the coefficient of friction (FC) at inception of seizure and when the focal deformation area has been fully engaged. The FC at the moment of seizure, f_{seiz}, is determined from the limiting angle (SA) (corresponding to a fully developed focal deformation area) by means of rolling wedge-shaped specimens. The determination of the FC and possible SA's on the hot rolling of steel were performed in the two-high stand of experimental mill 180. It was found that when $v = 0.23$ m/sec and the temperature was 1160-1180°, for steel st.3, the limiting SA was $\alpha_{seiz} = 24^{o}$ and $f_{seiz} = 0.44$.

Card 1/3

The SA and the FC that correspond to a loss of stability of the rolling process, were determined by means of either of two methods in the rolling of wedge-shaped specimens: a) from the appearance of the first traces of slipping on the contact surface of the rolled samples, and b) from the roll separating pressure of the metal. Dynamometer readings were recorded on moving-picture film with the aid of an MPO-2 oscillograph. The effect of furnace scale on the FC and maximum SA of the stationary process was ascertained by rolling wedge-shaped samples with and without surface scaliness. Efforts to determine the FC in the presence of scale for the stationary rolling process were unsuccessful, however, because at the smallest reduction value $\Delta h = 11$ mm the slipping process and the FC corresponding to total slippage were in the main unaffected by the presence or absence of scale. When scale was present, $f_{\delta} = 0.35 - 0.36$; when scale was absent, $f_{\delta} = 0.35 - 0.40$. The experiments showed that in the presence of a fully developed deformation area the furnace scale does have a decisive effect on the FC and on the stability of the rolling process. It is established that the scale exerts but an insignificant effect on the incipient rolling seizure, the FC, and the maximum SA in conditions of total slippage. In the presence

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308310015-0"

Investigation of the Conditions of Rolling Seizure (cont.)

of a fully developed deformation area the scale decreased the FC by 50-60 percent, creating a broad range in which the rolling operation was unstable, this range extending from SA's smaller than the angles of friction at the inception of seizure ($\alpha = 24^{o}$) to SA's equal to the angle at which slippage became total $\alpha_{б} = 39^{o} - 40^{o}$. The scale exhibited a significant influence on the degree of spreading that occurred and on the elongation ratio.

B. Ye.

1. Steel--Rolling--Friction--Analysis

SOV/124-58-4-4883

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 4, p 167 (USSR)

AUTHORS: Chekmarev, A. P., Ridner, Z. A.

TITLE: Actual Resistance of Carbon Steels to Plastic Deformation at Elevated Temperatures and High Strain Rates (Istinnoye soprotivleniye plasticheskomu deformirovaniyu uglerodistykh staley pri vysokikh temperaturakh i skorostyakh deformirovaniya)

PERIODICAL: Tr. In-ta chernoy metallurgii. AN UkrSSR, 1957, Vol 11, pp 18-32

ABSTRACT: Influence of strain conditions (temperature t, strain rate v, and total strain ε) upon the resistance s of carbon steels under monoaxial tension was investigated. The following expression was utilized: $s = P(1 + \varepsilon)/F_0$ where P is the load, F_0 is the initial cross-sectional area. A description is given of the high-speed tensile-rupture test installation used allowing to attain strain rates of $v = 400\ sec^{-1}$. A recording dynamometric device insured registration of processes with a frequency of up to 400 cps and a minimum test duration of 1/300 sec. Test samples consisting of cylinders with diameter-to-length ratio of 1/6 were heated to 800-1200°C. Conclusions based on the

Card 1/2

SOV/124-58-4-4883

Actual Resistance of Carbon Steels (cont.)

results of experiments on 10, 20, 45, U7A, and U10A steels were formulated and, aside from the well-known facts, a hypothesis was made that s increases with an increase in v and ε but is dependent upon the carbon content of the steel, although for some steels s decreases with an increase in carbon content.

I. K. Snitko

1. Steel--Deformation factors 2. Steel--Stresses 3. Steel--Temperature 4. Steel--Test results

Card 2/2

SOV/137-59-3-5080

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 27 (USSR)

AUTHORS: Chekmarev, A. P., Levin, S. L.

TITLE: Forty Years of Metallurgy at Dnepropetrovsk (Metallurgiya Dnepropetrovshchiny za 40 let)

PERIODICAL: Byul. tekhn. inform. Dnepropetr. obl. otd. O-va po rasprostr. polit. i nauchn. znaniy UkrSSR, 1957, Nr 4-5, pp 8-13

ABSTRACT: A survey is made of the development of metallurgy in the Dnepr river area from its beginning to the present.time.

T. K.

Card 1/1

CHEKMAREV, A. P. 137-1958-2-2769

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 80 (USSR)

AUTHORS: Chekmarev, A.P., Pavlov, V.L.

TITLE: The Distribution in Depth of the Plastic Compression Deformation in Large-ingot Rolling (Glubina rasprostraneniya plasticheskoy deformatsii szhatiya pri prokatke krupnykh slitkov)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkSSR, 1957, Nr 11, pp 53-66

ABSTRACT: The distribution in depth of a plastic compression deformation (DD) in the rolling of large ingots is determined: a) by the magnitude of the reduction, an increase in which increases the DD; b) by the H/D and H/B ratios, an increase in which decreases the diffusion depth; and c) by the plasticity of the steel, which depends on the chemical composition and structure of the metal, the rolling temperature, and the extent to which the ingot has been heated through. The DD is likewise affected by the speed of rolling and the magnitude of the external friction coefficient. The DD is not uniform throughout the width of the billet; it is greatest along the center of the billet, diminishing toward the sides. As the edges of the focal area of plastic compression deformation draw closer to the center of the billet, the deformation of the metal becomes more

Card 1/2

137-1958-2-2769

The Distribution in Depth of the Plastic Compression Deformation (cont.)

difficult. The inequalities $H/D \leq \alpha$ and $H/\ell_{\alpha} \leq 2$ do not delimit the penetration of the deformation throughout the entire height of the billet. The results of this study reveal a correlation between DD's which can be determined by direct measurement and those which are inferred from changes in the lateral contour.

V.D.

1. **Ingots--Rolling** 2. **Ingots--Deformation** 3. **Steel--Plasticity**

Card 2/2

CHEKMAREV, A.P. 137-1958-2-2783

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 83 (USSR)

AUTHORS: Chekmarev, A.P., Pavlov, V.L.

TITLE: On the Nonuniformity of the Deformation in Metal and on the Stresses That Occur in Large-ingot Rolling (O neravnomernosti deformatsii metalla i napryazheniyakh pri prokatke krupnykh slitkov)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1957, Vol 11, pp 67-85

ABSTRACT: A study was made of the change in degree of nonuniformity of the deformation (D) and of its distribution pattern in their relation to the amount of reduction (R) obtained and to various other factors. Eight 6.5 - 7.5 ton ingots of two grades of steel (axle and bridge) were rolled experimentally on an 1150 mm blooming mill at the Dzerzhinskiy works. The extent of vertical and transverse deformation in different regions of the billet, as related to the amount of R and other factors in the rolling process, was judged by the D of elements of composite spindles (sockets) and the pitch of a tapped thread which had been driven into the ingot in advance. When the ingots were rolled on the blooming miil, the vertical

Card 1/2

137-1958-2-2783

On the Nonuniformity of the Deformation in Metal (cont.)

nonuniformity coefficient of the D decreased as the reduction increased. It was found that the vertical and transverse nonuniformity of a deformation, the relative reductions being equal, was more clearly pronounced in the case of the tougher metal (the axle steel). When the large ingots were rolled on the 1150 mm blooming mill, the lateral and vertical distribution of the transverse spreading that occurred in the billet was generally unevenly distributed and was related to the lateral and vertical depth of penetration of the compressive D deformation into the billet section. The tests showed that increasing the effective diameter of the blooming-mill rolls to 1100-1150 mm (in the rolling of 7 - 7.5 ton low-carbon and medium-carbon steel ingots) assured deformation of the central strata from the very first pass. To produce, however, a relatively uniform vertical distribution of the deformation in the billet, the diameter would have to be increased to 1400 mm, which would necessitate a special review of the problem from the point of view of the power requirement.

B.Ye.

1. Metals--Deformation--Analysis

Card 2/2

CHEKMAREV, A.P. 137-1958-1-585

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 92 (USSR)

AUTHORS: Chekmarev, A.P., Nefedov, A.A.

TITLE: Forward Slip in Rolling With Rolls of Unequal Diameter (Operezheniye pri prokatke na valkakh neravnogo diametra)

PERIODICAL: Tr.In-ta chernoy metallurgii. AN UkSSR, 1957, Vol 11, pp 105-107

ABSTRACT: An investigation of forward slip (FS) in the rolling of a Pb strip of 10, 15, and 20 mm gage at 35 rpm on plain steel rolls (R) differing in diameter by 5, 8, 12, 25, and 35 mm shows that FS is always greater on the side facing the smaller R than on that facing the larger roll. The regularity governing the change in FS relative to thickness reduction is quite complex. When the reduction is small or moderate, there is a simultaneous increase in FS on the sides facing both R's. When the reduction is greater, forward slip on the side of the R of greater diameter is reduced, whereas on the side of the smaller R it increases sharply up to a given value, after which first a diminution and then a renewed increase is observed. At the same time, FS begins to increase on the side facing the R of larger diameter. An increase in the difference between the R's leads to a significant increase in the difference in FS. V.D.

Card 1/1

1. Lead--Processing 2. Rolling mills--Operation 3. Lead--Deformation--Effects of rolling

137-58-1-601

CHEKMAREV, A.P.

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 94 (USSR)

AUTHORS: Chekmarev, A. P., Meleshko, V. I.

TITLE: Stresses During the Rolling of Sheets of Carbon and Alloy Steel on a Lauta Three-high Mill (Usiliya pri prokatke listov iz uglerodistoy i legirovannoy staley na stane trio Lauta)

PERIODICAL: Tr. In-ta chernoy metallurgii, AN UkSSR, 1957, Vol 11, pp 115-124

ABSTRACT: An analysis of values experimentally obtained for the full pressure of the metal on the rolls (R) of a 3-high Lauta sheet mill with 750/550/750 mm R diameters and 2200 mm body length makes it possible to judge the stresses in R on rolling and the rationality of the distribution of reductions among the passes, and indicates the need to redistribute reductions so as to reduce the load on the intermediate passes. A formula is presented for the determination of a nominal radius of mills with R of unequal diameter when rolling is accompanied by elastic flattening of the R's. Curves for the relationship between the unit pressure and the thickness of the billet are presented in terms of the rolling temperatures investigated. Data derived

Card 1/2

137-58-1-601

Stresses During the Rolling of Sheets of Carbon (cont.)

may be used in analysis of equipment for sheet mills and in designing reduction procedures.

V.D.

1. Rolling mills--Stresses 2. Rolling mills--Characteristics

Card 2/2

CHEKMAREV, A.P.

137-58-2-2850

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 93 (USSR)

AUTHORS: Chekmarev, A.P., Meleshko, V.I.

TITLE: An "Inverted-oval Strip" Drawing-groove system (Sistema vytyazhnykh kalibrov "polosa - obrashchennyy oval")

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1957, Vol 11, pp 130-142

ABSTRACT: The development of the "incomplete-square strip" drawing-groove system now makes it possible to propose for adoption by industry a new "inverted-oval strip" system. This is the best system so far as the automatic turning of the strip in the smooth rolls is concerned. It guarantees reliable guiding-device performance on both sides of the mill, thus making possible the full automation of the rolling process and of its guiding devices. Included are methods and an example of a design calculation of grooves for an "inverted-oval strip" system, also the results of experimental rolling done with such a system.

V.D.

1. Rolling mills--Applications 2. Materials--Handling--Automation

Card 1/1

Chekmarev, A.P.

137-1958-2-2774

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 81 (USSR)

AUTHORS: Chekmarev, A.P., Klimenko, V.M., Meleshko, V.I., Chekhranov, V.D., Vorotyntsev, Yu.V., Shafran, I.K.

TITLE: A Study of an 1150-millimeter Blooming Mill (Issledovaniye blyuminga 1150 mm)

PERIODICAL: Tr. In-ta chernoy metallurgii AN Ukr SSR 1957, Vol 11, pp 152-174

ABSTRACT: A comprehensive investigation of the performance of an 1150-millimeter blooming mill showed that the actual amount of widening that occurs in the rolling of blooms and slabs is significantly greater than the customary calculations would indicate. This error in computation of the widening led to a faulty distribution of the reduction during each of the rolling passes. Measuring the pressure of the metal on the rolls and the current in the armature of the motor revealed the availability of reserve power, which could be used to increase the reduction in a given pass in the blooming mill. The greatest specific pressure in the rolling of mild and medium-carbon steels was exhibited by killed steel MZ subjected to cold upsetting. Curves of specific power consumption for the rolling

Card 1/2

137-1958-2-2774

A Study of an 1150-millimeter Blooming Mill

operation included here, should be useful in the planning and control of power use in a blooming mill. Time-and-motion studies showed the extent of and reasons for differences in the duration of passes and of the intervening pauses among various operators and made possible recommendations for cutting down production time and down time in blooming-mill operation.

V.D.

1. Rolling mills--Operation

Card 2/2

137-58-2-2845

CHEKMAREV, A.P.

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 92 (USSR)

AUTHORS: Chekmarev, A.P., Dinnik, A.A., Pobegaylo, G.G.

TITLE: Preloaded Rolling-mill Stands (Predvaritel'no nagruzhennyye prokatnyye kleti)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1957, Vol 11, pp 182-195

ABSTRACT: Whether or not rolled sections will have the specified dimensions is determined basically by the stiffness of the mill's finishing and prefinishing stands. The necessary stiffness of the stands can be attained in various ways, particularly by loading the rolls in advance. The method used, as proposed by the authors, is one that assures high accuracy of section contours in multiple rolling with long-bodies rolls. A stand with rolls thus preloaded operates with either one or two driving rolls. The effect of preloading is to bend the rolls by forcing them into contact at the collars situated at the center of the roll body. Included are a detailed description of this new method, a computation of the elastic deformation of the preloaded stand and of the forces exerted by the clamp-down screws, and the design calculation and structure of a roll contour.

V.D.

Card 1/1

1. Rolling mills-- Applications 2. Rolls--Design 3. Rolls

CHEKMAREV, A.P.

24-12-4/24

AUTHORS: Ridner, Z.A. and Chekmarev, A.P. (Dnepropetrovsk).

TITLE: Influence of the temperature, the speed and the degree of deformation on the resistance to plastic deformation of carbon steels. (Vliyaniye temperatury, skorosti i stepeni deformatsii na soprotivleniye plasticheskomu deformirovaniyu uglerodistykh staley).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.12, pp.22-29 (USSR)

ABSTRACT: The resistance to plastic deformation of carbon steels was investigated for hot shaping by pressure at various temperatures, speeds and reductions. Taking into consideration the practical conditions of heat treatment of carbon steels, the shaping temperatures were chosen between 800 and 1200°C; the deformation speeds were between 2 to 300 sec^{-1}, which corresponds to the most frequently occurring conditions of shaping by applying pressure. The reduction was determined from the size of the section on the diagram of dynamic stretching (up to the beginning of formation of a neck, since from this instant onwards the stress state changed from a linear to a three-dimensional one). The test set-up, a sketch of which is shown in Fig.1, permits uniaxial tensile loading with deformation speeds between 2 to 300 sec^{-1}. For

Card 1/6

Influence of the temperature, the speed and the degree of deformation on the resistance to plastic deformation of carbon steels.

obtaining dynamic stretching with a constant speed during the entire period of the tensile strength test, a high speed test machine was used, the design of which is based on a rolling stand with a flywheel. The rolling stand was driven by a 230 h.p., d.c. motor which was part of a Ward-Leonard unit and enabled wide variation of the r.p.m. The flywheel was of 4000 mm dia. weighing 12 000 kg and a semi-sleeve of 900 mm dia. was rigidly fixed on the shaft. The test set-up consisted of the drive, the flywheel, the half-sleeve and two hammers which were fixed to the semi-sleeve and two vertical columns supporting a heavy beam which carried the experimental specimen in the vertical position and also metering instruments for determining the deformation forces. According to calculations, the duration of fracture of a specimen exceeded 0.0033 sec at the highest speed of the hammers; assuming that the process approaches that of harmonic oscillations, the duration of the fracture of the specimen can be considered as half of an harmonic oscillation with a frequency of 150 c.p.s. Harmonic analysis of the force-time curve shows higher components; at the maximum deformation speed the amplitude of the third harmonic is 4.65% of the amplitude of the fundamental. Therefore, recording apparatus with a pass-band of up to 400 c.p.s. can be used. The deformation stresses were measured by means of a wire strain gauge, the terminals of which were connected to a three-stage low frequency amplifier,which permitted correct recording of processes at speeds up to 400 c.p.s. The electrical circuit diagram of the test apparatus is shown in Fig.3, p.24. For recording the process of fracture, contacts were so arranged that an oscillograph with an electromagnetic feeding of the recording film was put into operation when the hammers were at a distance of 100 mm from the specimen to be hit. The specimens consisted of five different carbon steels with composition as given in the Table, p.25. The dimensions of the specimens are entered in the drawing, Fig.4, and these were produced from rolled rods of 18 to 22 mm dia. Prior to machining, the rods were normalised in a muffle electric furnace at

24-12-4/24

Influence of the temperature, the speed and the degree of deformation on the resistance to plastic deformation of carbon steels.

a temperature 25 to 30°C higher than the upper critical point. Heating of the specimens to the desired temperature was effected after fitting them into the test set-up, using an electric furnace specially designed for the purpose. The specimen temperature was measured by means of thermocouples at the middle of the length of the specimen. Heating of the specimens to the required temperature took five to eight minutes and the temperature was held for another five to seven minutes so as to equalise it throughout the cross section. The used test set-up permits obtaining oscillograms analogous to those obtained during static tensile tests (Fig.5, p.26); on the oscillograms the vertical axis represents the deformation stresses, whilst the horizontal axis represents time. Evaluation of the oscillograms yielded graphs of the relation "real resistance to deformation vs. logarithm of the deformation speed" and such a graph for "Steel 45", with a reduction of 12%, is reproduced in Fig.6. From analysis of the relations obtained experimentally and entered in Figs.7-11, the following conclusions can be made on the influence of individual factors on the

Card 4/6

Influence of the temperature, the speed and the degree of deformation on the resistance to plastic deformation of carbon steels.

resistance of the metal to plastic deformation: due to the effect of the heavy flywheel, stretching of the specimen proceeded with a constant speed; the speed of the light sensitive recording film was also constant. Consequently, the abscissa of the tension curve in the oscillogram can be compared with absolute elongation of the specimen and the horizontal projection of the curve will correspond to the elongation of the specimen during tension. Knowing the initial length of the specimen and its elongation during the tensile test, it is possible to determine the relative elongation for each point of the oscillogram by assuming constancy of the deformed volume of the metal. The resistance to plastic deformation increases with increasing deformation speed and the respective values differ greatly depending on the particular grade of steel; numerical values are given for the five tested steels for the deformation speeds of 10 and 100 sec^{-1}. With increasing temperature, the resistance to plastic deformation decreases and the decrease has the same character for all the carbon steels.

 The influence of the degree of deformation on the

24-12-4/24

Influence of the temperature, the speed and the degree of deformation on the resistance to plastic deformation of carbon steels.

resistance of the metals to deformation was found to be identical for all the tested grades of steel. With increasing carbon content in below-eutectoidal steels, the resistance to plastic deformation increases with increasing temperature at relatively small deformation speeds; at elevated temperatures and higher deformation speeds, the resistance to plastic deformation decreases with decreasing carbon contents in below-eutectoidal steels. In above-eutectoidal steels, changes in the carbon content do not have an appreciable influence on the resistance to plastic deformation at elevated temperatures.
There are 11 figures and 1 table.

SUBMITTED: November 13, 1956.

AVAILABLE: Library of Congress.

Card 6/6

SOV/137-59-3-6743

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 258 (USSR)

AUTHORS: Chekmarev, A. P., Kapturov, L. Ye., Klimenko, P. L.

TITLE: An Experimental Investigation of the Specific Pressures During Rolling in Plain and Grooved Rolls (Eksperimental'noye issledovaniye udel'nogo davleniya pri prokatke na gladkoy bochke i v kalibrakh)

PERIODICAL: Tr. Mezhvuz. nauchno-tekhn. konferentsii na temu: "Sovrem. dostizh. prokatn. proiz-va". Leningrad, 1958, pp 20-28

ABSTRACT: The specific pressure (SP) was measured with the aid of circular wire resistance strain gages which were attached to the exterior surface of a thin-walled dynamometer cylinder mounted in the roll, as well as to an area on the surface of the cylinder which was not subjected to deformation (compensating gage). It was established, in the course of rolling (R) of lead strips (22, 16, 10, 6, 4, and 2 mm thick, and 20, 35, 50, and 100 mm wide) at reductions ranging up to 60%, that the width of the strip does not appreciably affect the nature of distribution of the SP's along the length of the contact area. In all instances, the magnitude of the SP diminishes toward

Card 1/2

SOV/137-59-3-6743

An Experimental Investigation of the Specific Pressures During Rolling (cont.)

the edge of the strip; for strips 50 mm wide or wider, the value of the SP on the center of the strip remains constant. Hot R of strips of 08KP steel (22, 16, 10, 6, and 4 mm thick and 50 mm wide) at various temperatures substantiated the assumption that temperature variations affect the magnitude of the SP but do not influence its distribution along the width and the length of the contact area. A comparison between the experimental data and the results obtained with the aid of formulas by A. I. Tselikov, A. A. Korolev, and Ekelund demonstrates that the theoretical values of the SP's computed by the formulas of Tselikov and Korolev are very close to the experimental values, but that the same values computed with the aid of the Ekelund formula are considerably lower. Diagrams of the distribution of the SP's are presented for the following conditions: Distribution of SP's along the contact arc during R of a horizontal oval, a square, a vertical oval, and a circular shape 40 mm in diameter through an oval pass opening (PO); distribution of maximum SP's along the width of an oval PO during R of shapes of square and circular cross section; distribution of maximum SP's across the width of a circular PO during R of an oval shape as well as the distribution of maximum SP's across the width of a square PO during R of oval and diamond shapes.

V. D.

Card 2/2

SOV/137-58-9-18957

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 114 (USSR)

AUTHORS: Chekmarev, A.P., Dinnik, A.A., Grechko, V.P.

TITLE: The Deformability of Steel When Rolled at High Draft (Deformiruyemost' stali pri prokatke s bol'shimi obzhatiyami)

PERIODICAL: V sb.: Prokatn. i trubn. proiz-vo, Moscow, Metallurgizdat, 1958, pp 75-92

ABSTRACT: Certain problems of the plasticity of metal when rolled at high drafts with an angle of contact greater than the angle of friction ($\alpha > \beta$) are presented. Analysis of the stressing of the deformed metal rolled with $\alpha > \beta$ shows that the stresses vary from point to point and that their distribution is dependent upon the conditions of reduction. In view of the unevenness of deformation and the influence of the exterior zones, new stresses appear in addition to the basic ones. In cases of rolling with high drafts and at $\alpha > \beta$ angles on merchant and billet mills, the ratio of the contact arc to the height of the strip is adequate, and it may be taken that the full thickness of the strip is subjected to working. The experimental portion of the work sets forth the results of experiments in determination of the stress

Card 1/2

SOV/137-58-9-18957

The Deformability of Steel When Rolled at High Draft

pattern of the metal in the contact area when $\alpha > \beta$. The hypothesis to the effect that a longitudinal tensile stress exists in the inlet portion of the contact area is confirmed. The rolled metal and low- and high-carbon steels are shown to be highly plastic. In the rolling of billets of large cross section, no breaks in the continuity of the metal due to the process of deformation are found. Experiments reveal the metal to be of high density across its entire section when it is rolled at high draft, and this has a favorable effect upon the mechanical properties of the metal. Analysis of experimental data shows that when rolling is done at high drafts, no further opening of cracks at the start of the contact area, where a different pattern of stresses is operative, occurs. Moreover, as a result of the high level of reduction in height per pass and the considerable body forces of compression in the field of the β angle, conditions for the welding of defects are created in the contact zones of the strip, it being understood that this holds under conditions of absence of nonmetallic inclusions and oxidation of the surface at the loci of crack formation. Therefore the frequent turning manipulation required in large-draft rolling owing to the conditions involved in forming the desired section make for the production of high-quality rolled product. 1. Rolling mills--Performance 2. Steel--Deformation 3. Stress analysis

B.Ts.

Card 2/2

SOV/137-58-9-18964

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 115 (USSR)

AUTHORS: Chekmarev, A.P., Klimenko, V.M., Meleshko, V.I.

TITLE: Roll-separating Pressure in Rolling on Blooming Mills (Davleniye metalla na valki pri prokatke na blyumingakh)

PERIODICAL: V sb.: Prokatn. i trub. proiz-vo. Moscow, Metallurgizdat, 1958, pp 92-108

ABSTRACT: Investigations have yielded data on total and specific pressures in the rolling of carbon and alloy steels in a blooming mill. Pressure is measured by special hydraulic capsules, with strain gages. The investigation was carried out on blooming mills at various plants, wherein new pressure-sensitive capsules were made with allowance for the special features of the given mill. A graph of distribution of total roll-separating pressures among the passes in the rolling of steels of various grades is adduced. In order to clarify the possibility of increase in draft in the rolling of hard steels and to create a rational rolling flow sheet from the viewpoint of the stresses in the rolls, an analysis of the flexure under maximum pressures in each grooved roll is made. Graphs of the relationship

Card 1/2

SOV/137-58-9-18964

Roll-separating Pressure in Rolling on Blooming Mills

between the mean specific vertical pressures and the magnitude of H/D for steels of the grades under investigation are presented. The nature of these expressions differs from those previously available.

B.Ts.

1. Rolling mills--Pressure distribution 2. Pressure--Measurement 3. Strain gages --Applications 4. Stress analysis

Card 2/2

SOV/137-59-1-1770
Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 232 (USSR)

AUTHORS: Chekmarev, A. P., Gulyayev, G. I.

TITLE: Groove Design for Reducing and Sizing Pipe-rolling Mills (Kalibrovka reduktsionnykh i kalibrovochnykh stanov)

PERIODICAL: V sb.: Prokatn. i trubn. proiz-vo. Moscow, Metallurgizdat, 1958, pp 276-294

ABSTRACT: In the process of reducing and sizing of pipes (P) subjected to little or no tension the quality of the P's is influenced not only by the magnitude of the deformation to which they are subjected in the separate stands of the reducing and sizing mill, but also by the degree of ellipticity of the grooves (G). The theory and practice of rolling of P's in two-high reducing and sizing machines shows that the diameter of the P entering the rolls must not exceed the width of the G's if reliable gripping of metal by the rolls as well as high quality of the rolled article is to be ensured. However, if the groove design of two-high pipe-rolling stands is based on the principle requiring that the width of each subsequent G be equal to the height of the preceding G, a condition results in which, as a consequence of wear, the width

SOV/137-59-1-1770

Groove Design for Reducing and Sizing Pipe-rolling Mills

of the subsequent G's is smaller than the height of the preceding G's, which, in turn, causes overfilling of the G's with metal and leads to the formation of undercuts. Modern pass design includes provisions for the spreading of the metal. It was established that twisting of P's occurs if the degree of ellipticity of G's in two-high rolling stands is greater than 1.120. This condition leads to overfilling of the G's with metal, distortion of the cross section of the P, and results, occasionally, in complete spoilage of the article. In addition to an intensification of the deformation processes and a decrease in the number of stands in a continuous reducing and sizing machine without mandrels, the employment of an increased degree of deformation in individual stands should also permit wide variation in the dimensions of the rolled articles. It is established that the quality of the P's is favorably affected by an increase in the degree of deformation in individual stands. Methods of computing parameters for two-high reducing and sizing machines with elliptical G's are presented.

B. Ts.

Card 2/2

AUTHORS: Chekmarev, A. P., Klimenko, P. L. SOV/163-58-1-22/53

TITLE: Experimental Method for the Determination of the Specific Frictional Forces and of the Frictional Coefficients by the Gripping Device in Rolling (Eksperimental'nyy metod opredeleniya udel'noy sily treniya i koeffitsiyenta treniya po duge zakhvata pri prokatke)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 1, pp 117-121 (USSR)

ABSTRACT: A method was devised for the direct determination of frictional forces and frictional coefficients on the basis of the determination of the specific forces of the pressure on the rolls in the rolling process. For experimentally determining the specific frictional forces it is necessary to calculate three magnitudes at the same time, viz. the radial specific pressure P and the forces F_1 and F_2. The forces F_1 and F_2 are variable, and are functions of the angle α. The angle ε is calculated from the experimental determination of the forces F_1 and F_2.

$$\varepsilon = \operatorname{arc\,tg} \frac{F_2}{F_1}.$$

Card 1/2

SOV/163-58-1-22/53

Experimental Method for the Determination of the Specific Frictional Forces and of the Frictional Coefficients by the Gripping Device in Rolling

The specific frictional force is expressed by the equation $\tau = p \operatorname{tg} \beta$ (3).
The frictional coefficient is calculated by means of the equation $\mu = \operatorname{tg} \beta = \frac{\tau}{p}$.
The experiments were carried out by means of a roll with a diameter of 270 mm.
The specific pressure and the coefficients of the internal and external friction in rolling at a gripping angle of $\alpha = 11^0$ and $\alpha = 6^0$, and at a length of the gripping device of $l_D = 25,6$ mm and $l_D = 15,0$ mm were determined, and the results were graphically represented. There are 6 figures.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: October 7, 1957

Card 2/2

CHEKMAREV, A.P., akademik; SAF'YAN, M.M., dotsent; MELESHKO, V.I., kand. tekhn.nauk; TOPOROVSKIY, M.P., inzh.

Experimental investigation of pressure and capacity of roughing stands for continuous sheet metal rolling mills. Izv. vys. ucheb. zav.; chern.met. no.5:115-120 My '58. (MIRA 11:7)

1.AN USSR (for Chekmarev). 2.Dnepropetrovskiy metallurgicheskiy institut i Institut chernoy metallurgii AN USSR.
(Rolling mills)

CHEKMAREV, A. P.

CHEKMAREV, A.P., akademik; NIKOLAYEV, V.A., inzh.

Conditions of gripping by grooved rolls. Izv.vys.ucheb.zav.; chern.met. no.11:77-86 N '58. (MIRA 12:1)

1. AN USSR (for Chekmarev). 2. Dnepropetrovskiy metallurgicheskiy institut i Dneprodzerzhinskiy vecherniy metallurgicheskiy institut. Rekomendovano kafedroy obrabotki metallov davleniyem Dneprodzerzhinskogo vechernego metallurgicheskogo instituta.
(Rolling (Metalwork))

CHEKMAREV, A.P., akademik; NIKOLAYEV, V.A., inzh.

Investigating the coefficient of friction during hot rolling. Izv. vys. ucheb. zav.; chern. met. no.12:57-67 D '58. (MIRA 12:3)

1. AN SSSR (for Chekmarev). 2. Dnepropetrovskiy metallurgicheskiy institut i Dneprodzerzhinskiy vecherniy metallurgicheskiy institut. (Rolling (Metalwork)) (Friction)